

Claims

- [c1] 1. A method for providing data for a data table in a controller configured to process data from a system, the data table having a plurality of data cells, each of the data cells being defined by a row and a column in the data table, the method comprising:
- measuring a system parameter value;
 - determining an error based on the difference between a predetermined value and the measured parameter value;
 - reading a value from a first data cell in the data table, the first data cell corresponding to current system conditions;
 - determining respective target values for at least some data cells in the data table, the at least some data cells including the first data cell, each of the respective target values being a function of at least the determined error and the value read from the first data cell; and
 - selectively modifying data values in the at least some data cells based on the respective target values.
- [c2] 2. The method of claim 1, further comprising:
- determining a respective adjustment amount for each of

the data values in the at least some data cells, each of the respective adjustment amounts being defined as the difference between a respective target value and a data value in a data cell;

determining a respective maximum adjustment for each of the data values in the at least some data cells; and

wherein selectively modifying data values in the at least some data cells includes adjusting a cell value toward a respective target value when the respective adjustment amount and the respective maximum adjustment have the same sign, the adjustment being limited by the lesser in magnitude of the respective adjustment amount and the respective maximum adjustment.

[c3] 3. The method of claim 2, wherein selectively modifying data values in the at least some data cells includes making no adjustment to a data cell value when the respective adjustment amount and the respective maximum adjustment have opposite signs.

[c4] 4. The method of claim 1, further comprising:

determining a respective weighting factor for each of the at least some data cells; and

wherein each of the respective target values are a function of at least the determined error, the value read from the first data cell, a respective weighting factor, and the weighting factor of the first data cell.

[c5] 5. The method of claim 4, wherein each row in the data table has a respective row weighting factor, each column in the data table has a respective column weighting factor, and each of the respective weighting factors for the at least some data cells is defined as the product of a respective row weighting factor and a respective column weighting factor.

[c6] 6. The method of claim 5, wherein the respective target values are defined by:

$CELL_TARGET_{i,j} = (C + E) (W_j \cdot W_i) / G$, where
 $CELL_TARGET_{i,j}$ is the respective target value for a cell at column (i), row (j), where (i) and (j) are integers; C is the value read from the first data cell; E is the determined error; W_i is the weighting factor for column (i); W_j is the weighting factor for row (j); and G is the gain, or weighting factor for the first data cell.

[c7] 7. The method of claim 1, further comprising:
comparing at least one current system condition to a respective predetermined condition; and
selectively modifying data values in the at least some data cells only when the at least one current system condition matches the respective predetermined condition.

[c8] 8. The method of claim 7, the system including a power-

train in a vehicle, the powertrain including an engine and a transmission having transmission oil, wherein the at least one current system condition includes a speed of the engine and a temperature of the transmission oil, and wherein the data values in the at least some data cells are selectively modified only when the engine speed is within a predetermined speed range and the transmission oil temperature is within a predetermined temperature range.

- [c9] 9. A method for providing data for a data table in a controller configured to process data from a system, the data table having a plurality of data cells, each of the data cells being defined by a row and a column in the data table, the method comprising:
- measuring a system parameter value;
 - determining an error based on the difference between a predetermined value and the measured parameter;
 - determining respective target values for at least some data cells in the data table, the at least some data cells including a first data cell corresponding to current system conditions, and at least one additional data cell not adjacent to the first data cell, the respective target values being a function of at least the determined error; and
 - selectively modifying data values in the at least some data cells based on the respective target values.

- [c10] 10. The method of claim 9, further comprising:
determining a respective adjustment amount for each of the data values in the at least some data cells, each of the respective adjustment amounts being defined as the difference between a data value in a data cell and a respective target value;
determining a respective maximum adjustment for each of the data values in the at least some data cells; and
wherein selectively modifying data values in the at least some data cells includes adjusting a cell value toward a respective target value when the respective adjustment amount and the respective maximum adjustment have the same sign, the adjustment being limited by the lesser in magnitude of the respective adjustment amount and the respective maximum adjustment.
- [c11] 11. The method of claim 10, wherein selectively modifying data values in the at least some data cells includes making no adjustment to a data cell value when the respective adjustment amount and the respective maximum adjustment have opposite signs.
- [c12] 12. The method of claim 10, further comprising:
determining a respective weighting factor for each of the at least some data cells; and
wherein each of the respective target values are a func-

tion of at least the determined error, a respective weighting factor, and the weighting factor of the first cell.

[c13] 13. The method of claim 12, wherein each row in the data table has a respective row weighting factor, each column in the data table has a respective column weighting factor, and each of the respective weighting factors for the at least some data cells is defined as the product of a respective row weighting factor and a respective column weighting factor.

[c14] 14. The method of claim 13, wherein the respective maximum adjustments are defined by:
$$\text{MAX_ADJ}_{i,j} = E \cdot W_j \cdot W_i$$
, where E is the determined error; W_i is the weighting factor for column (i); and W_j is the weighting factor for row (j), where (i) and (j) are integers.

[c15] 15. The method of claim 13, further comprising:
reading a value from the first data cell; and
wherein each of the respective target values are a function of at least the determined error, the value read from the first data cell, a respective weighting factor, and the weighting factor of the first data cell.

[c16] 16. The method of claim 15, wherein the respective target values are defined by:

$CELL_TARGET_{i,j} = (C + E) (W_j \cdot W_i) / G$, where
 $CELL_TARGET_{i,j}$ is the respective target value for a cell at
column (i), row (j), where (i) and (j) are integers; C is the
value read from the first data cell; E is the determined
error; W_i is the weighting factor for column (i); W_j is the
weighting factor for row (j); and G is the gain, or weight-
ing factor for the first data cell.

[c17] 17. The method of claim 9, further comprising:
comparing at least one current system condition to a re-
spective predetermined condition; and
selectively modifying data values in the at least some
data cells only when the at least one current system con-
dition matches the respective predetermined condition.

[c18] 18. The method of claim 17, the system including a
powertrain in a vehicle, the powertrain including an en-
gine and a transmission having transmission oil, wherein
the at least one current system condition includes a
speed of the engine and a temperature of the transmis-
sion oil, and wherein the data values in the at least some
data cells are selectively modified only when the engine
speed is within a predetermined speed range and the
transmission oil temperature is within a predetermined
temperature range.

[c19] 19. A controller configured to process data from a sys-

tem, the controller having a resident data table including a plurality of data cells, each of the data cells being defined by a row and a column in the data table, the controller comprising:

an algorithm for providing data for the data table, the algorithm including instructions for determining an error based on the difference between a measured parameter value and a predetermined value, determining respective target values for at least some data cells in the data table, and selectively modifying data values in the at least some data cells based on the respective target values, the predetermined value being related to current conditions of the system, and each of the respective target values being a function of at least the determined error and a value read from a first data cell.

[c20] 20. The controller of claim 19, the system including a powertrain in a vehicle, the powertrain including an engine and a transmission having transmission oil, wherein the measured parameter value is a transmission shift time, and the current system conditions include a speed of the engine and a temperature of the transmission oil.

[c21] 21. The controller of claim 20, wherein the algorithm further includes instructions for selectively modifying data values in the at least some data cells only when the engine speed is within a predetermined speed range and

the transmission oil temperature is within a predetermined temperature range.

[c22] 22. The controller of claim 19, further comprising a keep alive memory, and wherein the data table resides in the keep alive memory.

[c23] 23. The controller of claim 19, wherein the at least some data cells include the first data cell and at least one additional data cell not adjacent to the first data cell.

[c24] 24. The controller of claim 19, wherein the algorithm further includes instructions for determining a respective weighting factor for each of the at least some data cells; and
wherein each of the respective target values are a function of at least the determined error, the value from the first data cell, a respective weighting factor, and the weighting factor of the first data cell.

[c25] 25. The controller of claim 19, wherein the algorithm further includes instructions for the following steps, determining a respective adjustment amount for each of the data values in the at least some data cells, each of the respective adjustment amounts being defined as the difference between a data value in a data cell and a respective target value;

determining a respective maximum adjustment for each of the data values in the at least some data cells; and wherein selectively modifying data values in the at least some data cells includes adjusting a cell value toward a respective target value when the respective adjustment amount and the respective maximum adjustment have the same sign, the adjustment being limited by the lesser in magnitude of the respective adjustment amount and the respective maximum adjustment.

[c26] 26. The controller of claim 19, wherein selectively modifying data values in the at least some data cells includes making no adjustment to a data cell value when the respective adjustment amount and the respective maximum adjustment have opposite signs.